



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

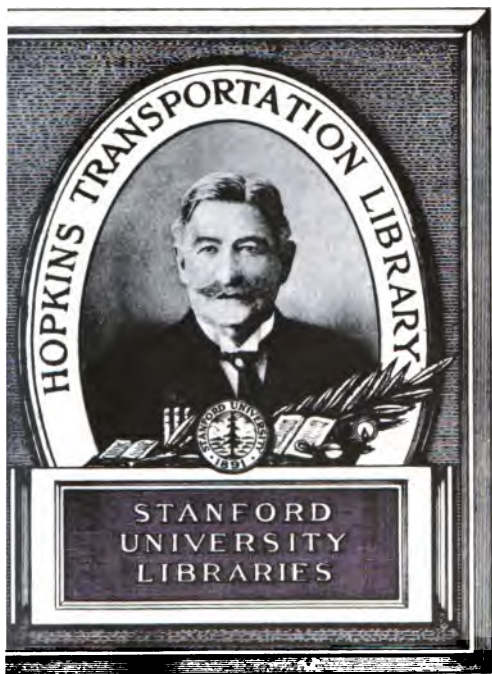


3 6105 128 522 948

Elliot, Frederick Boileau.

An address on the prospects of railway enterprise in Natal.

HE3419 N27E4



F. A. BIRD

HRL
7
9
7

AN ADDRESS

ON THE PROSPECTS OF

RAILWAY ENTERPRISE

IN NATAL,

DELIVERED BY

FRED. BOILEAU ELLIOT, ESQ.,

Secretary Natal Central Railway Company and Natal Coal Company.

PIETERMARITZBURG :

P. DAVIS & SON, PRINTERS, LONGMARKET STREET.

1864.

HE
No 1

RAILWAY ENTERPRISE

IN NATAL.

A public meeting of the inhabitants of Pietermaritzburg was held in the Town Hall on Thursday evening for the purpose of learning the views and opinions of Mr. F. B. Elliot on that subject, previous to his departure by the next mail steamer.

His Worship the Mayor opened the meeting at the hour appointed (half-past seven) by stating the objects for which it had been convened. He then introduced Mr. Elliot, recommending those present to give him their most earnest and patient attention.

Mr. Elliot, who was received with hearty cheers, spoke as follows:—Mr. Mayor and Gentlemen, the question to which I have been asked to address myself to-night refers to the past, present, and future prospects of railway enterprise in Natal. I should not do justice to this question were I to confine my remarks altogether to the influences which the system of railways might exert upon this colony alone. I shall, therefore, trespass upon your patience while I touch upon its early history, and state the progress it has made in other countries; and I shall offer no apology for claiming from you a patient and attentive hearing, because the subject with which I am about to deal is in itself one which can scarcely fail both to interest and amuse you, and because it is one to which the thoughts of so many among you have been long turned with anxious solicitude. It has often been said that men may live in habitual contact with the most wonder-

ful and beautiful objects, and yet remain altogether unimpressed by their magnificence. The peasant may dwell beneath the mountain range, whose colossal peaks are covered with eternal snows, and yet show no homage for its grandeur; and multitudes will wander listlessly upon the shore, unconscious of the sublimity of the ocean. Thus, the very wild flowers upon which we so heedlessly trample during a summer's stroll, would, to the inhabitants of the frozen north, form objects of unceasing wonder and admiration; while the prairie and primeval forests, which form only the mere hunting ground to the American Indian, become to the pale-faced wanderer a glorious theme for poetry and romance. And this principle is true with reference to man's intercourse with the realms of science. We are often ignorant of its operations, as we are familiar with its effects. The blessings which it confers are daily enjoyed, till their amplitude makes us indifferent to the causes and means from which they originate; indeed, we seldom inquire into the causes by which scientific results are produced. Such is the case, to a great extent, with that mighty and elaborate locomotive system which has arisen under our own observation, which filled all with admiration, till its wonders were almost too numerous to be appreciated, and yet, with the arrangements and operations of which so few of us are acquainted. No mightier physical agency has ever been discovered for the promotion of the comfort and welfare of man. The discovery, or rather the invention of printing, gave to genius an immortality, and to mind an almost universal range. By the spread of true religion, by the establishment of a purer morality, and by the advancement of science, literature, and art, it effected a revolution in the world. Yet, not less glorious or wonderful were the moral and physical triumphs which attended the invention of the steam engine. That invention was one which, in hackneyed phrase, seemed to have annihilated time, and bridged over the difficulties of space, economised labour, opened up a thousand new sources of wealth, and, by facilitating communication and thus fostering the social and commercial relations between classes and nations, turned enmity into friendship, and promoted peace and good will among men. Yet what were the

circumstances attending the birth of this glorious child of genius and good promise? Was it ushered into the world amid the cheering plaudits of a grateful people? Or was it nurtured into vigorous youth by the love of a nation? No! such was not the case. It was born amid poverty and trouble, and baffled hope long watched beside its cradle. Few, save its parents, could recognise in its puny infancy that spirit of unconquerable vitality against which no opposition or persecution could long prevail, but which was destined, in after years, to shower upon the heads of its early opponents and persecutors the blessings of its success. Gentlemen, nothing is more painfully productive of genuine self-abasement than to turn to a page in the history of one's country which betrays the littleness and intolerance of that which we have prided ourselves in considering a great and free people. No words could be strong enough to condemn the treatment suffered by the first advocates of railways in England. Most of those who first advocated the introduction of railways were made the victims of unmerited neglect or persecution. The fate of Mr. Thomas Gray was a reproach to the justice and intelligence of England. He spoke, wrote, worked, and travelled from one end of the land to the other, in order to convince the world of the advantages of railways; and though he lived to see the realization of his hopes and predictions, yet (to use the language of his biographer) "he died, steeped to the lips in poverty." In the pulpit, in parliament, and in the press, his ideas were ridiculed as the disordered fancies of insanity. Many lords and commoners, distinguished in no other respect, distinguished themselves by the unreasoning bitterness of their opposition; and, in too many instances, was literature found arrayed against science, in a spirit of such bigoted hostility, as to appear utterly unaccountable. I hold in my hand an extract from the *Quarterly Review*, of 1824, in which the reviewer deems the advocates of railways and "their visionary schemes unworthy of notice;" and, in reference to a projected railway between London and Woolwich, which was calculated to travel at twice the velocity of coaches, he adds—"We should as soon expect the people of Woolwich to be fired from one of Congreve's rockets as to trust themselves to such a machine, going at such a rate." Yet the *Quarterly Review*

held a high place in the world of letters, and over the opinions of a large class of readers, exercised an almost despotic sway.

It was far more natural that poetry should be enlisted on the same side, and it is difficult to cavil at the motive that could draw from the poet of Mount Rydal those beautiful and touching lines, which, with your permission, I shall now read to you :—

Is there no nook of English ground secure
From rash assault? Schemes of retirement sown
In youth, and mid the busy world kept pure
As when their earliest flowers of hope were blown
Must perish; how can they this blight endure?
And must he, too, his old delights disown,
Who scorns a false utilitarian lure,
'Mid his paternal fields at random thrown?
Baffle the threat, bright scene, from Orres head,
Given to the pausing traveller's rapturous glance!
Plead for thy peace thou beautiful romance
Of nature; and if human hearts be dead,
Speak, passing winds; ye torrents, with your strong
And constant voice, protest against the wrong!

Certainly with the death of the old coaching system expired much of the poetry, as well as the discomfort, of travelling.

We miss the cantering team, the winding way,
The roadside halt, the post-horn's well known air,
The inns, the gaping towns, and all the landscape fair.

But it was not to those tender effusions that the early opponents of the railway system confined themselves. They were chiefly influenced by great folly, or by great selfishness, which often induced them to raise an opposition with a view to being bought off; and the reaction which took place in the railway mania brought upon them, when the crash came, a just retribution, though it involved also many innocent persons in the general ruin. The folly of the railway mania can scarcely be said to have exceeded the folly of the railway opposition by which it was preceded. To quote the severe, yet expressive language of Lord Macaulay,—“There were fools then as there are fools now; fools who laughed at the railways as they had laughed at the canals; fools who thought they evinced their wisdom by doubting what they could not understand.” Nor were the means employed confined to parliamentary or legal opposition, ridicule, or argument. In conducting the surveys, brickbats, cudgels, and horse ponds were freely used by the

landowners against the engineering staff. Such operations had to be conducted either at night time, by the aid of dark lanterns, or under the protection of a regiment of assistants, who were often unable to resist the opposing forces brought against them. Thus, if we refer to the newspaper accounts of those days, we notice such headings as these:—"Opposition to surveyors from proprietors;" "Plan to outwit a clergyman;" "Desperate affray at Glenfallach;" "Fearful conflict on the estate of Sir W. Milner;" "Determined struggle on Lord Harborough's property near Stapleford Park." Then follows a list of the wounded, which would do no discredit to a well-fought battle field. One hon. gentleman, who has lately distinguished himself by a strong opposition to the Natal Central Railway Bill, has since confided to me that, in early life, as a railway surveyor, he had been obliged, in fear and trembling, to take surreptitious observations with a theodolite over a garden bottle-glass wall. (Laughter). Such scenes, however, no longer occur in England, where landowners now rush in crowds to the support of an undertaking which brings value to their property, and comfort to their daily lives. Much that has lately been done before the committee of the Legislative Council resembles, in miniature, the great contests before committees of the House of Commons in the infancy of the railway. When George Stevenson was under examination before the last-mentioned august body, he was asked what would be the result if a locomotive engine came in contact with a cow on the line? To which he gravely replied, in his broad dialect, "it wad be vara bad for the coo." (Laughter.) Well, the identical cow somehow or other got on to the Central Railway here, and was hunted up and down by two honorable members during the greater part of a sitting of the committee; and even when the engineer, with a zeal and ingenuity that did him infinite credit, had not only succeeded in getting the cow off, but had even placed an imaginary ditch between the trespassers and the forbidden ground, the obnoxious beast was, to one's horror and surprise, again found courting an untimely end during a subsequent sitting of the committee, and the exciting hunt was again renewed with as much earnestness as ever. (Laughter.) One great difference may be noticed

between the contest which has lately taken place before the committee of the Council here, and those which enlivened the committees of the House of Commons in bygone years. No legal and organized opposition was established against the bills of the two companies whose representative I am; and time was so short, and proof so conclusive, that I did not even claim to address the committee upon the evidence given. Thus we have not witnessed those forensic displays of eloquence by opposing counsel, or that strange conflict of evidence by opposing engineers, which gave a zest to former contests. I hardly know whether you would like that I should briefly sketch for you a scene in a parliamentary railway committee in those stirring days. (The growling of a dog in the body of the hall here interrupted the speaker). The growls which I hear from one part of the room seem to me, at this stage of my subject, so appropriate to the scenes I was about to sketch for you, that it seems almost an inspiration which guides me as to which course I ought to pursue. (Loud laughter, cheers, and cries of "go on.") Fancy yourself, then, with me in the committee-room of the British House of Commons. In that room there is a table, covered with green cloth, and scattered with books, plans, and maps. At the top of the table sits the chairman, and around him ten or twelve gentlemen, members of committee. There is an air of fustiness pervading the apartment, which seems, indeed, to be attendant upon all committee-rooms. The fat, fussy gentleman, who stands at the end of the room, wiping the steaming perspiration from his face with a colored handkerchief, is the promoter of the line under discussion. He has just been roasted by the opposing counsel, and has had hot work of it. The witnesses are scattered about the room, having just given their evidence. Some of them are honest men, conscientious opponents and supporters of the line; others are influenced more by self-interest than by honesty. But the great mass of them belong to that peculiar class of railway witnesses to which the necessities of the time gave rise. They were a hard and a brazen race. I remember the story of a man who was a scavenger by trade, and who was of a literary, scientific, and argumentative turn of mind. (Laughter.) He rendered himself so intolerable in his own domestic circle, and in the low

debating club of which he was a member, that he became a nuisance to all with whom he came in contact. He soon found that he was destined for a railway witness, and in that capacity bothered all the lawyers. His wife used to say that he would puzzle even that old gentleman who was said to be at the head of that learned profession, of which I am myself an unworthy member. (Loud laughter.) He discovered that he possessed a natural turn for giving railway evidence. He gave evidence concerning gradients, curves, rates of velocity, &c.; but at length became so intolerable, that upon his coming to give evidence, a cry was always got up, "Here is the scavenger!" and he had to disappear. But he was a strong-minded wretch, and by no means easily disposed of. One of this class having, in the course of his evidence, stated that a horse was fourteen feet high, and subsequently having alluded to the horse as being fourteen "hands" high, the counsel interposed, and said, "Why, sir, you first stated it was fourteen feet high." "Did I," said the witness, "then if I said so, I'll stick to it. It *was* fourteen feet high, and that's the solemn truth." (Roars of laughter.) Well, he was a fair sample of his class. But to continue. The imaginary gentleman, with the big bald head and spectacles, is the engineer for the company; and the other gentleman opposite to him, with a bigger head, and without spectacles, is against the line. I will not give you their evidence separately, because I can include it in the remarks made by the two counsel. The first counsel who addresses the committee is at a loss to understand what argument can possibly exist against the railway, which, while it will cost but little to the shareholders, will be an inestimable advantage to the community at large, and especially will promote the interests of those two towns it is proposed by this means to connect in bonds of fraternal love. He proves from the engineer that there are no engineering difficulties to contend against. If there is a range of mountains, it is tunnelled through with the greatest speed and facility; if there is a marsh, a viaduct forms a handsome and appropriate ornament to the neighbourhood. No sooner do you arrive at the banks of a broad river, than it is bridged over with the same astonishing celerity. The beauty of the surrounding neighbourhood is enhanced by the limpid

transparency of the river over which the line has to pass. The village churches, embowered with trees, the parks and hamlets that stud the surrounding country, give token of the wealth and comfort of the inhabitants. Is it credible that the selfishness of the few should interfere with the happiness of the many, and that upon the evidence of a few perjured and suborned witnesses, so great and so noble a scheme should be overthrown? At the conclusion of this address, the stout promoter looks refreshingly cool and relieved; but now the opposing counsel rises up, and, in a tone of virtuous indignation, declares his wish that he could bring himself to view this matter in the light in which it has been regarded by his learned friend, who, although doubtless particularly disinterested in this matter, seems to have been influenced by evidence so shallow and so suspicious as to be utterly unworthy of credit. This proposed railway is to pass over a line of bleak and barren country, intersected by fathomless marshes, by rapid rivers, and by mountain ranges, which form insuperable obstacles to such an undertaking, even at the most lavish expenditure. And for what purpose has it been proposed? Why, simply, to connect two towns, which, from local rivalries and antipathies, and from the natural features of the intermediate country, seem destined by God and man to be kept asunder. He feels satisfied that the British House of Commons will never lend its sanction to a scheme which can have emanated from none but madmen, and been promoted by none but rogues; and which, whilst failing in every useful object, and while infringing upon many private interests, will bring ruin and disaster upon the confiding shareholders. After this counsel had resumed his seat, the fat promoter looks again more unhappy than ever. Such, in miniature, is a sketch of those proceedings upon which the fate of the railway system at one time depended. But I will not longer detain you over battles that have been fought and won, and will merely ask you to glance passingly at some of the results which followed upon the victory achieved. In 1825, it was proved, by evidence given before the House of Commons, that goods had been conveyed quicker from New York to Liverpool than from Liverpool to Manchester. Instances were given where two and three months' delay had taken place in the land

carriage, while the voyage by sea had been made in three weeks. Not only the delay, but the cost also of transport was enormous. The Stockton and Darlington railway was the earliest of our iron roads, having been incorporated in 1821, and opened in 1825; horses being first employed as the motive power. Before its formation, the average number of passengers between the two places was fourteen or fifteen weekly; the new line augmented these to about six hundred. Before the establishment of the Liverpool and Manchester railway, there ran between those towns twenty-two regular, and seven occasional, coaches, which, if half-full, would carry only three hundred and forty-four persons a day. The railway, on the other hand, carried 700,000 during the first eighteen months, or, not including Sundays, 1,500 a day. The saving to the manufacturers in the neighbourhood of Manchester in the carriage of cotton alone at once amounted to about £20,000 a year. No arguments could weigh against facts like these. With astounding celerity the railway system has spread, not only over England, but over the whole civilised world. The returns of the Board of Trade exhibit the marvellous impetus given to the trade of the country by the facilities of transport and locomotion. In Great Britain and Ireland, more than 12,000 miles of double and single line have been constructed. In 1863, about 200,000,000 of passengers were carried by railways of the United Kingdom, which gives an average of about seven journeys, of fifteen miles each journey, for each man, woman, and child of the whole population. The total receipts of all the different lines amounted, during the last year, to more than £30,000,000, which exceeds the whole interest of the National Debt. In the same year were carried 64,000,000 tons of coal and other minerals, 31,000,000 tons of general merchandize, and 14,000,000 of living animals. Some season ticket holders travel as many as 600 journeys in the year; and, in the same period, more than 115,000,000 train miles (that is, 4,600 times the circumference of the earth, or 20,000,000 miles more than its distance from the sun) were run by more than 4,000 trains, or at the rate of 11,000 a day,—or eight for every minute of the day and night. All this work is accomplished with a speed, regularity, and security which is abso-

lutely marvellous ; for, in spite of the accounts which reached you in the year 1862 of frightful railway accidents and collisions, there were only twenty-six passengers killed from causes beyond their own control. Thus, only one passenger in about 8,000,000 is killed in the course of the year from such causes, or, in other words, a careful passenger, on any ordinary journey, would risk about one eight-millionth part of his life, or one—two hundred and sixty-sixth part of a dram of his weight—considerably less than an eye-lash, or a single condensed breath from his mouth on the carriage window. (Laughter.) From these calculations, it would almost necessarily follow that if a man wishes to lead a life of almost absolute peace and security, he had better at once get into a railway carriage and remain there as long as he possibly can. In the old coaching days the accidents were a thousand times more numerous and more fatal in comparison to the number who travelled ; nor do I agree with the philosophy of the argument with which the old stage-coachman backed his preference for a death by coach accident, when he sagely remarked—“ Yer see, if ye’r upset in a coach, why there yer are ; but if ye’r upset in an express train, why where are yer ? ” (Laughter.) It is a very remarkable fact, that since the extinction of the old coaching system, the number of horses and vehicles engaged in the transport of goods and passengers has greatly increased ; and, by referring to the returns of the Board of Inland Revenue, it will be seen that even the number of stage coaches have not materially fallen off. In France the same result is noticeable ; and the records of the “*péages des barrières*” will prove, that in the face of the extraordinary amount of traffic absorbed by the railways, that on the ordinary roads has progressively increased. Such, though loosely strung together, are some of the wonderful results of steam power applied to locomotion. It is not strange that all nations and localities should be found struggling for a share of the blessings which accompany its presence. On the Continent, where in former years railways, during construction, have had to be guarded by the bayonets of the military from threatened destruction by folly and prejudice, they are eagerly sought for. The more level country having been covered by a network of iron roads, they are now

projected over Alpine passes, and seem destined to surmount the loftiest mountain ranges. In America, the new-born power was, from the first, welcomed with open arms. There the railways transformed deserts into populous and cultivated districts ; while, under the magic of its presence, cities sprang up amidst what had been a howling wilderness. But if the steam horse has been found all powerful in developing the arts of peace, and increasing the wealth and prosperity of the nation, it has been found not less powerful as a terrible engine of war ; and every railway near the disputed territory has, in its turn, become a bone of contention between North and South, and has formed a battle field for fierce, cruel slaughter. I was in India before the introduction of the railway system into that country, and well do I remember the solemn warning of the croakers, who said, "Take heed how, in face of an annual deficit, and a chronic state of insolvency, you plunge the country into such an enormous expenditure as these public works will necessitate. Wait only till the revenue exceeds the expenditure, and the finances of the country are in a more prosperous state." But a wider and bolder policy prevailed, and the results have been such as to furnish a useful lesson to future generations. In the year 1863, £9,250,000 was the amount reserved for public works, £4,000,000 of which was for guaranteed interest to railways ; yet, in the same year, the first great surplus was declared, £4,000,000 applied to the reduction of the debt, the duty on iron reduced, and one-fourth of the income tax taken off. "We may search history in vain," says the *Times*, "for an authentic record of a change so vast and wonderful as that which has come over the destinies of our great Oriental empire." * * * "After twenty years of wars and deficits, India has at length emerged into a period of peace and surplus, and she knows well that the connexion between these two things is by no means accidental."

The cost of locomotion in India was immense. During the last campaign in the Punjaub it was estimated that every man in the British army had cost £150, and, of course, as much more would be required to replace him if he were killed or disabled. The usual allowance on an Indian line of march is one camel to two fighting men, and, including the other items of

elephants, bullocks, horses, and camp followers, the expense becomes prodigious. But while lessening the cost, the railways have increased the efficiency of the army; and to illustrate more clearly this view of the case, I will, with your permission, read to you an extract from the speech of Sir Henry Bartle Frere, Governor of Bombay, on the subject of the Bhoze Ghaut Incline, when His Excellency thus graphically expressed himself:—

But the effect of these works on the fortunes of India, are, I believe, destined to be far more important than merely supplying a theme for popular admiration, or the substance of a popular proverb. I do not speak merely of their effect on commerce and material prosperity. It is scarcely possible to exaggerate the importance of the railway in this respect. But this effect is so obvious and immediate that it hardly requires to be pointed out. Equally unnecessary would it be to dwell on the value of the railway as a military machine. Some of us have served with the men of our European regiments, who marched with but one halt from Panwell to Poona, to fight the battle of Kirkee; and all of us can estimate the imminent military and political advantage of a work which will connect all the capitals of India, and place the garrisons of Madras and Bombay as close to each other, in point of time, as those of Bombay and Poona were within living memory. It is no exaggeration to say that the completion of our great lines of railway will quadruple the available military strength of India. Nor would I even dwell on the manifold blessings which will attend the work, as mitigating some of the severest evils which can afflict humanity. We all of us know, either from our own experience, or from that of our friends, how great is the blessing of such ready and easy means of transport between distant points. The fever-stricken patient, who longs for the cool sea-breeze, or the wearied man of business, who needs the bracing climate of the Deccan, need no longer experience, with a feeling akin to despair, the impossibility of moving; and every class—the roaming foreigner from a far land, as well as the home-loving native of India—will have reason to bless the facilities which the railway affords for cheap and easy locomotion. But in addition to, and above all these, this work will, I believe, be productive of moral effects in comparison with which its vast physical results may be said to be literally insignificant.

Let us now turn for a moment to another, and far different land, and we shall trace the same effects to the same causes. In Australia, the Geelong and Melbourne railway was commenced by a company in 1853, and was constructed and worked at a cost which forms a favourable contrast to those lines which have since been executed by the Government. By a report of the Colonial Engineer, it was pronounced the most economical that has been constructed. Yet in spite of the lavish expenditure which has been caused by high freights, high wages, and construction, or contracts under Government, the traffic has

increased so far beyond anticipation, that the very excess of working expenses has been stated, in official reports, to be owing to the large additional amount of rolling-stock required for the service of the line. So thoroughly are these facts understood, and so valuable are the advantages already obtained by the country, that Bills are constantly passing through the Australian Parliaments for the creation and extension of railways. Bearing upon this subject, there is an extract from a paper read before the Philosophical Society of New South Wales by Sir William Dennison, wherein the matter is put in so plain and practical a light, that I will ask for it an attentive hearing:—

As an instance of the actual amount of benefit conferred upon a particular locality, the returns from Campbelltown may be taken. Campbelltown is about thirty-three miles from Sydney, upon a road to which a good deal of attention has been paid. The return states the actual amount of traffic backwards and forwards to be about 8,700 tons per annum, and the average cost to be 2s. per ton per mile, or £28,710 per annum, as the whole charge for transport. Now, by railway at 6d. per ton per mile, the whole charge would amount to £7,177; and the difference between this and the former amount of £28,780 is £21,533 per annum; but a portion of the indirect benefit conferred upon this district by the substitution of a railway for a turnpike road. I say but a portion, for, in the first place, I have made no allowance for the saving of money and time to the passengers on the road; I have not calculated on the increased traffic which will, most assuredly, be the result of railway communication; neither have I taken the increased value given to property into consideration. I have merely taken the present amount of goods traffic, and have shown that the saving in the cost of transporting it for a distance of thirty-three miles amounts to upwards of £21,000 per annum—a sum which, at six per cent., represents a capital of £850,000. As, then, the present cost of transport in this colony far exceeds that by turnpike roads in England, the saving to the inhabitants by the introduction of railways will be larger in proportion than in England.

The next question to be considered in forming an estimate of the indirect benefits resulting from railway communication is the increase in the value of property in many parts of the colony. The land, of which the Government is in possession of thirty-nine-fortieths, is unsaleable. The distance from a market, and the enormous cost of transport, would render land at a distance of one hundred miles from Sydney almost valueless, even were it of the richest description. Take, for instance, a farm of one hundred acres, at one hundred miles from market, and assume the produce available for sale to be eight hundred bushels of grain of some sort. This, which would weigh about twenty tons, would, at the rate of about two shillings per ton per mile, cost for transport only £200, or five shillings a bushel; and the farmer would, of course, be utterly unable to compete with the foreign producer. Even the farmer in Michigan, who has to bring his grain, or the flour produced from it, a distance of nearly two thousand miles to New York, and thence twelve thousand or fourteen thousand miles by sea to New South Wales, would be able to undersell a farmer living not more than one hundred miles from Sydney, whose only communication is by the ordinary roads of the colony. Put, however, the farmer within a few miles of a railway, and

everything is reversed. His produce is conveyed to Sydney for £50 instead of £200, or for one shilling and three pence, instead of five shillings. He is therefore in a position to undersell the foreign producer, and a market being insured for the produce of his farm, the land in the neighbourhood assumes a value proportionate to its quality, and a rise in the price of from three hundred to four hundred per cent. may be fairly expected.

In the Mauritius, the engineer, acting under the instructions of Lord Stanley, has estimated the saving to the various sugar estates, in transport alone, at £23,000 a year; and in general passenger traffic the saving would be still larger. But why dwell longer on instances where the advantages of steam transport have been felt and admitted? In Canada, and in Ceylon, in Egypt, and in the Brazils, we can trace the extension of the system, and the blessings that flow from its presence. Even the Capetown and Wellington Railway, with fifty-nine miles of line, and with a revenue little more than one-fourth of the lowest estimate for that between Durban and Maritzburg, has not deterred the people, both of the Eastern and Western Provinces, from clamouring loudly for railway extension; nor has it deterred Sir Philip Wodehouse from entering upon it. Gentlemen, the condition of Natal is such as to render an improved system of transport not only desirable, but an absolute necessity to the progress and well-being of the colony. Yet still I cannot say that I should deem it either wise or honest on your part, if you were at once to swallow the food you hunger for, without first counting the cost, and ascertaining your ability to pay for it. Will you, then, as practical men, follow me while I plunge into figures, and strive from out of past experience to wring some lessons for our future guidance? And here I would beg of you, as a favour, to interrupt me without scruple whenever I make any statement regarding which you would have either evidence or explanation. The little railway from Durban to the Point is the most successful example of railway enterprise with which I am acquainted. It was calculated to cost a moderate sum, and it *did* cost a moderate sum in addition to that moderate sum. (Prolonged laughter). Yet notwithstanding this, the directors and shareholders are so impressed with the value of their property that, for the purchase of that line, they demand 100 per cent. profit, in addition to all that it has cost them. (Laughter). That is a very successful example. Now

I am about to pass into a speech that will require figures by way of exemplification, and as I know there is

“ A chiel amang us takin’ notes,”

I suppose I must be careful in what I say. The necessity of railways to Natal is beyond all dispute. If the cost of traffic was high in Australia, we don’t hear of its coming to a deadlock, as I have reason to fear will be the case in this colony. I am no prophet of evil, but if, with lung disease and from other causes, the present means of transit should receive a check ; if we find merchants paying £3 to £3 15s. for the carriage of their goods ; if in Victoria, people say produce won’t pay the producer unless some improved means of transport be adopted, we arrive at this great fact,—that we must go into the system with which I am now dealing, and resign ourselves to the liability to meet the very moderate guarantee which has been demanded from this colony. Still I would not recommend to the colonists of Natal to take this great boon without seeing into its cost, and calculating what it may be worth. With your permission, I am about to read to you a table of such cost, which I shall give to the reporter. It will give you an idea how little we can depend upon any isolated calculation of the costs. The cost of constructing railways has varied to a very remarkable extent, having been greatly influenced by local and other special circumstances attending the formation of the companies, and the construction of the different lines. Thus, the the total cost per mile attending the construction of the Hull and Hornsea railway was £4,615 ; of the Lynn and Hunstanton, £5,333 ; of the York and Scarborough, £6,000 ; and of the Dundee and Arbroath, £8,600. In 1845, between one and two hundred miles of railway were constructed, at a cost per mile of not more than £10,000. The average cost per mile of nine other lines is £56,915. The Dock and Birmingham junction cost £100,000 per mile ; the Blackwall, £266,000 ; and the Greenwich, £270,000 ; while other metropolitan lines have varied from £500,000 to £1,250,000 per mile. Professor Vignoles has stated that, on an average, the hitherto ascertained cost of the principal lines may be divided thus :—Land, ten per cent. ; stations and carrying establishment, twenty per

cent.; management, ten per cent.; iron, ten per cent.; and works of construction proper, fifty per cent. To such a scale, however, there are many remarkable exceptions, which it may be worth while to notice;—for instance, the cost of purchasing land, and for compensation, has been stated by Mr. Laing, in a paper appended to the evidence given by him before a select parliamentary committee on railways, as follows:—The Newcastle and Carlisle railway, £2,200 per mile; the Grand Junction, £3,000; the South Western, £4,000; the Manchester and Leeds, £6,150; the London and Birmingham, £6,300; while on three other lines, the expenditure averaged £14,000 per mile; and on some metropolitan lines, fifty times that amount, or £70,000. Nor need we feel surprised at these figures, since we find it stated in the *Times* of August last that a single statute acre of land in the City of London had been sold for upwards of a million and a half sterling. The legal and parliamentary costs form another very important item of expenditure. We find that on the Brighton railway such costs averaged £4,806 per mile; on the Manchester and Birmingham line, £5,190; and on the Blackwall line, no less than £14,414. And it is instructive to examine some of the items which go to form those enormous totals. When the bill for the Brighton line was before the committee, the expense of counsel and witnesses was stated at £1,000 per diem for more than fifty days; while the solicitors' bill of the South Eastern railway contained 10,000 folios, occupied twelve months in taxation before the Master, and amounted to £240,000, forming only forty-six per cent. of the total legal and parliamentary expenditure for that railway. If any gentlemen of the long robe are now present, the figures I have just now quoted may well make their lips water, and their hearts warm with a generous appreciation of railways. (Laughter). Those were grand days for lawyers. The following examples will serve to show the immense outlay incurred by some railways on account of legal and parliamentary expenses. Expenses such as I have referred to amounted, in the case of the Eastern Counties Company, to £268,201; the Great Northern, £234,219; the Great Western, £760,270; the London and North Western, £869,771; the London and South Western, £313,702; the Midland, £597,890; the South

Eastern, £515,707. The total amount of legal and parliamentary expenses incurred by the seven lines named will be found to be £3,659,760, showing an average of £522,823. Now, if we examine into the cost of foreign and colonial railways, we shall find that it varies from £5,000 to £20,000 per mile. The average cost of railways in Austria and Belgium, in 1856, amounted respectively to £16,378 and £16,391 per mile; in France, in 1854, to £25,668 per mile; in Germany, in 1855, to £12,111 per mile; in Great Britain and Ireland, in 1857, to £27,721 per mile; in Holland, in the same year, to £19,931; in India, in 1859, to £12,367; in Prussia, Switzerland, Tuscany, and the United States of America, to the following amounts respectively, £14,101, £19,888, £15,556, £8,275. Striking an average from the figures just quoted gives us £17,217. But within the last eight years, many hundred miles of British, colonial, and foreign railways have been constructed, at a cost varying from £6,000 to £10,000 per mile. Thus we find that the present average cost of American lines computed at from £6,000 to £6,550 per mile, and many hundred miles have been completed at an average of little more £5,000 per mile. One line in Ohio is said to have cost only £1,100 per mile. From Charlestown to Augusta, in Georgia, 135 miles were finished in three years, and cost only £2,062 per mile. The Hudson's River and Lake Erie line, which measures 537 miles, and is one of the longest and most difficult lines in the world, cost £9,027 per mile. The Grand Trunk line of Canada cost £8,500 per mile; the Mauritius £20,000; and the Capetown and Wellington line £10,000 per mile.

With reference to the cost of iron, it must be admitted that railway companies have paid dearly for the experience they have at last obtained regarding the weight, shape, and quality of the rails best suited to the purpose. The great increase of traffic resulting from the facilities afforded by railway communication has necessitated a corresponding increase in the speed, and consequently in the weight, of the locomotive engine; and the light rails originally laid down have been replaced by others of a far heavier description, which, in many instances, have in their turn been superseded by lighter but better manufactured iron. For it has been found that the quality of the manufac-

ture of railway iron has not advanced in proportion to the weight it has been required to sustain at high speeds, and that very heavy rails are much inferior in quality and welding to those of a lighter character, and split and laminate more readily. These facts exercise a very important influence respecting one large item in the cost of construction, and more especially in foreign or colonial railways, for which the rails have to be brought from great distances. Thus, in France, the very heavy English patterns have been replaced by lighter ones, while the operation of relaying the permanent way on the American lines by substituting heavier rails for the very light ones originally laid down, commenced so long ago as 1848, in which year no less than 71,000 tons of English railway iron was sent to the United States. In some British, foreign, and colonial railways, vast, and in many instances disproportionate sums, have been expended on the erection of stations and works of art, the magnificence of which can scarcely be realized by those who have not seen them, and which, in some cases, have added from £2,000 to £6,000 per mile to the entire cost of the lines. The Euston and Camden stations unite to form the Metropolitan terminus of the London and North Western railway. They enclose nearly fifty acres of land, and contain within their area many miles of railway and sidings; yet though they have been erected at a lavish expenditure, they do not afford greater space than is absolutely requisite for the accommodation of the enormous traffic of the line. In Spain, Smyrna, Mauritius, and at other places, both the cost of the stations and their dimensions, have been altogether disproportionate to the character and requirements of the undertakings, and can only be regarded as instances of unjustifiable extravagance. In works of construction proper, there has generally been less room for wasteful expenditure; yet even under this head, it cannot be denied that contractors have realized immense fortunes at the expense of the shareholders, and that many millions have been wasted in the useless endeavour to lay out railways by as near an approximation as possible to a level surface, instead of following more closely the natural form of the earth in the formation of lines. The Great Western and London and Birmingham railways may be regarded as models of the uniform system, in which the

amount of original outlay has been only a secondary consideration.

I turn, now, to another portion of my subject. Much has lately been said regarding the gradients and curves of the proposed Central Railway, but if we pay attention to what has been accomplished in other parts of the world, we shall find no cause for dissatisfaction. I have prepared a table of heavy gradients as they exist on different British, foreign, and colonial railways, the substance of which I will now give to you, and I will hand this, as well as other similar documents, to the gentleman who is reporting, in order that they may be printed in full. To begin, then, with the lines of Great Britain. We find, on the Birmingham and Gloucester (Lickey incline) there are upwards of two miles at a gradient of 1 in $27\frac{1}{2}$; on the Edinburgh and Glasgow, for one mile and a quarter, the gradient is 1 in 42; on the East Lancashire (Accrington incline), for a distance of two miles, the gradient is 1 in 39; on the Leicester and Swannington, at one place the gradient is 1 in 17; on the Manchester and Leeds line, we have 1 in 49; on the Oldham and Manchester, for a distance of a mile and a half, it is 1 in 27. On the St. Helens there are many gradients varying from 1 in 85 to 1 in 35. In the Western Vallies (in Wales), where there is a heavy mineral traffic, there are numerous inclines at 1 in 30 and 1 in 40. Turning, then, to the United States of America, we find that, in Long Island, the rise is as much as 200 feet per mile, or a gradient of 1 foot in $26\frac{1}{2}$; on the Central Pennsylvania line there is a rise of 95 feet per mile for $9\frac{1}{2}$ miles, which is equal to 1 in 55; on the Baltimore and Ohio there is a rise of 116 feet per mile for seventeen miles, or 1 in 45; on the Virginia Central there is a rise of 275 feet per mile for two miles, or 1 in 19. One portion of this line, known as the "mountain-top track," is over four miles in length, and has gradients of from 1 in 17 to 1 in 22. In 1862 this line was reported by the engineers to have been worked for four years with the greatest success, and without the occurrence of an accident. A locomotive could draw, over the steepest gradient of this line, double its own weight, at a speed of eight miles an hour. The sharpest curve on this line has a radius of $7\frac{1}{2}$ chains (500 feet) on a gradient of 1 in 22. Upon Australian lines

there are but few gradients over 1 in 40. The Geelong and Ballarat railway rises 1,701 feet in a distance of forty-seven miles, and the Melbourne and Murray River railway rises, within a similar distance, to a height of 1,886 feet. In Austria, the Semmering railway has a rise of nearly 1 in 40, and this for a distance of more than seventeen miles. The engine weighs forty-eight tons, and carries up this incline 251, 283, and 338 tons, at an average speed of from nine to twelve miles an hour. In Germany there is the Dusseldorf and Elberfeld line, which, for a mile and a half, has a gradient of 1 in 30. In India, on the Bhoire Ghat incline, upon the Great Indian Peninsular line, for a distance of five miles and six chains, the gradient is 1 in 40; for two miles and fifteen chains, it is 1 in 50; for one mile, it is 1 in 37; and on the Thal Ghat incline, for a distance of four miles and twenty-nine chains, it is 1 in 37. In Spain, upon the Santander and Alder railway, there is a gradient of 1 in 27. Experiments were made at Sheffield for this railway on a gradient of 1 in 27, with satisfactory results. Turning to Sardinia, I find that, upon the Turin and Savona line, for nine miles continuously, the gradient varies from 1 in 40 to 1 in 41. On the Turin and Genoa line, the Govi incline commences at about seven and three-quarter miles from Genoa, at a point of 295 feet above the level of the Mediterranean. It ascends thence, for about six miles, to an elevation of 1,184 feet, being an average gradient of 1 in 29 to 1 in 36. There is a tunnel on this incline of two miles and a half. In fine weather the locomotive will carry up about 100 tons, and in the worst weather never less than 70 tons, at a speed of fifteen miles per hour. Upon the Midland Railway, in the island of Mauritius, there are two gradients, each three miles in length, at 1 in 27; two gradients, each two miles in length, at 1 in 30; another, for four miles, at 1 in 40; and another, for three miles, with a similar rise. These last are extracted from the report on Mauritian railways by James Longridge, under instructions from Lord Stanley, Secretary of State for the Colonies. In that report the engineer says—

There is nothing impracticable in working these gradients. In fact, there are instances of such being in daily operation; and experience has shown that, with a class of engines properly constructed, they may be worked with entire success. The cost of working must, of course, be somewhat greater, and par-

ticularly so with a heavy traffic, such as exists on some of the main lines in England. But with a traffic similar to that now under consideration, and where no great speed is required, I believe it will be found that the cost of working this line will not be much greater than that of the north line. Be this as it may, I have no doubt of this line being successfully worked, and that it is, under all circumstances, that which is best adapted to the requirements of the country.

There is an article in the *Times* (November, 1863), on Mr. Cross's safety locomotive for the St. Helen's line, which

Running through a hilly mineral district, is a remarkable sample of sharp curves and gradients. In a length of about thirty miles it has a constant succession of curves, varying from 500 feet radius down to 170; and it has gradients from 1 in 85 to 1 in 35; and it has, moreover, a large number of "points and crossings" opening into the various mineral deposits. * * * * *

Thus the process is simple, for rendering heavy and powerful engines practicable, by increasing their wheel base, and distributing the load, for the ascent of heavy gradients. A mountain side may thus be traversed by a series of zigzags, like those of the old horse-paths, and narrow and tortuous valleys may be threaded along the course of mountain streams. The highlands of Scotland and of Wales, of Derbyshire and the Lake districts, the mountainous regions of Italy, Switzerland, and Spain, are all within the reach of a cheap system of locomotion, dispensing with costly tunnels and protracted periods of time; and it becomes easy to deal with the streets and roads of towns and cities, when a powerful engine, capable of large loads and high speeds, can move freely round a curve similar to that of the Oxford Street circus. If any of our readers doubt, let them visit the St. Helen's line, and judge for themselves, where they will find an engine, not merely not costly, but with a principle capable of adaptation to existing stock. Hitherto, engines for lines of sharp curves have not been well adapted to high speed, but that difficulty has ceased. The same engine may traverse the plains, and make its journey through—or rather over—the mountains with equal facility, with the exception that it cannot carry so heavy a load uphill as on the plain. And it has the additional advantage, that the blending a sharp curve with a steep ascent—the most difficult of all railway problems under present circumstances—will in no way interfere with free rolling movement, or absorb any power beyond that due to gravitation and axle friction.

Mr. Badger here apologized for interrupting the speaker only for a moment. He (Mr. B.) wished to know whether those inclines were worked by stationary or locomotive engines.

Mr. Elliot.—By locomotives. If you desire it, I will read you extracts from the reports of the engineers of these different lines, with reference to the economical working of these gradients. Mr. E. then proceeded as follows:—

Well, gentlemen, since that article was written, several improvements have been effected in locomotives which prove that the language of the writer has not been too highly colored.

Not many years since, the French and Sardinian Governments agreed to guarantee a loan for piercing the Alps with a railway tunnel, which was to cost some millions of money, and occupy, I think, twenty-two years in construction. But, before one-tenth of the tunnel can be completed, the enterprising contractor, Mr. Brassey, undertakes to carry the line over the Mont Cenis pass, on gradients of one in eleven. In January last, during my short stay in England, I was invited to visit Manchester, for the purpose of witnessing the experiment with Mr. Fell's engine, on an incline one hundred and fifty yards long, with gradients of one in ten, and one in twelve, on curves reversed, one hundred and fifty feet radius. The weight of the engine was sixteen tons, on four wheels, coupled; the cylinders eleven and three-quarter inches in diameter, with eighteen inches stroke; and the wheels were two feet three inches in diameter. The horizontal wheels were one foot four inches in diameter, with twelve tons on all, by spring pressure, and the two cylinders were eleven inches in diameter, with twelve inches stroke. It went up an incline, empty, at twelve miles an hour; with two wagons, of fifteen tons, nine miles an hour; with four wagons, of twenty-eight tons, six to seven miles an hour—gross weight, say forty-four tons. It passed all the curves perfectly smoothly, and stopped and started on the S curves easily, both up and down. I have dwelt thus long and tediously on the question of gradients because a false alarm has been raised on the subject, and because it has been attempted to be proved, that heavy gradients must enormously increase the working expenses of railways. Such would not, in reality, be the case in a colony like this, where a low rate of speed only is required, and where the ascent is, to a great extent, compensated for by the descending gradient. Speed is more expensive than inclines. I hold in my hand a table of motive forces applicable to trains at thirty-three miles an hour.

Gradients.	The resistance in lbs per ton.	Horse-power per ton.	Load in tons for a loco- motive engine.
1 in 20	137·00	12·05	22·4
1 „ 30	99·66	8·76	30·8
1 „ 40	81·00	7·13	37·8
1 „ 50	69·80	6·15	43·9
1 „ 100	47·40	4·17	64·7

But if we attend to the relative proportion between the load and the velocity at which it can be carried, the difference is still more apparent.

Rate of speed in miles per hour.	Load in tons that can be drawn by a locomotive of ordinary power.
10 miles.	250 tons.
15 "	138 "
20 "	83 "
25 "	50 "
30 "	28 "

We learn from this, that on a gradient of one in fifty, an engine can draw a load not quite double that which it can draw on one in twenty; while at a speed of ten miles an hour, the same engine can take five times the load it can take at twenty-five miles an hour. The cost also of wear and tear is equally in favor of steep inclines over high velocities; and an express train in England is a far more costly luxury than would be a train passing at fifteen or eighteen miles an hour over the line between Maritzburg and Durban.

Gentlemen! I have been so often taunted with not being able to prove what the future working expenses of any particular line of railway may be, that I must beg, for a few minutes, to direct your attention to that most important part of the subject with which I am dealing. It is true that if, in estimating for the future, we discard from us all experience of the past, we are not likely to arrive at any accurate conclusion. But if, in a case of this kind, we earnestly endeavour, by careful examination of the working of a system in every part of the world, to obtain a clue to the future, depend upon it we shall not greatly fail. I shall not now attempt to drag you into that maze of figures and evidence from which I was enabled to arrive at my traffic statistics for the Central Railway. Those estimates have been printed and published, and the fairness and moderation with which they had been drawn up has been over and over again admitted—in the Council, the press, and by the public generally. It would not be hard for me to prove to you that, for the very purpose of obtaining so general an assent, I had framed those estimates far below what, from the evidence in my possession, I had reason to believe was the truth. But I obtained my object, and was contented with the result, for those estimates gave to the Cen-

tral Railway an income of £84,000 per annum in the first year after its completion ; and when you reflect upon the impetus which a railway gives to commerce and agriculture, and consider that the trade and traffic of Natal has more than doubled in every five years of its existence as a British colony, you may easily arrive at a conclusion as to what the traffic and profits of such a line will be. Keeping steadily in view, then, the peculiar character of the different lines, the amount of traffic, the speed at which it is to be carried, the cost of skilled labor and of fuel, there will be but little difficulty in establishing a fair comparison between a railway in Natal and in other regions of the earth. Let us first examine the working of the railways in Austria, Belgium, France, Germany, Great Britain, Holland, India, Prussia, Sardinia, Spain, Switzerland, Tuscany, and the United States of America, and we shall find that the average is—

Receipts from traffic per mile of line open	... ..	£1595
Proportion per cent. of working expenses to receipts...	51.7	per cent.
Dividend	... ..	4.9 „

For the Central, the estimate is, (first year) £1,200 per mile ; working expenses, fifty per cent. ; dividend (guaranteed) six per cent.

In India, where the cost of skilled labour is double what it is in this fine climate, and where the rates for carriage are less than one half of ours, £1,300 per mile covers the guarantee. There is, therefore, nothing in their figures but what is encouraging. Again, the length of the Central Railway, as proposed by the company's engineer, would be seventy miles, while the line proposed by Messrs. West and Milne would be little under fifty-five miles. If we leave a margin of five miles, and take all the railways in Great Britain and Ireland between fifty and seventy-five miles in length, we shall obtain fourteen lines which will serve us for comparison with the proposed Central Railway. These are—first, the Cornwall ; second, Dundalk and Enniskillen ; third, Londonderry and Enniskillen ; fourth, Dublin and Belfast Junction ; fifth, Inverness and Aberdeen ; sixth, Monkland ; seventh, Portpatrick ; eighth, Dublin and Drogheda ; ninth, Great North of Scotland (main line) ; tenth, Newcastle and Carlisle ; eleventh, Scottish Central Railway ; twelfth, South Yorkshire ; thirteenth, Taff Vale ; fourteenth, Shrews-

bury and Hereford. I have only returns for ten months on the Portpatrick Railway; but, with that exception, the following will be found an accurate average of all the above-mentioned lines. Only six of these lines exceed in their receipts the estimate for the Central Railway in the first year of its existence.

Miles open	...	...	59½
Maintenance and renewal of way	...	...	£11,145
Locomotive power	...	...	14,008
Repairs and renewals	...	...	5,298
Traffic expenses	...	...	12,088
General charges	...	...	5,976
Government duty, rates, and taxes	...	...	2,775
Working expenditure	...	...	51,339
Total receipts	...	...	110,059
Nett receipts	...	...	58,720
Per centage to receipts	...	...	47 per cent.

An attentive examination of the returns connected with these fourteen lines will bring to our notice several remarkable facts. For instance, the first six of them do not equal in their receipts the estimate for the Central Railway in the first year of its existence, while three of them (the Taff Vale, Scottish Central, and Newcastle and Carlisle) average over £200,000 per annum. The dividends on the three first and the last I have not been able to learn; but, on the remaining nine, the average is 5½ per cent. The average number of trains on the lines will be over twenty-two each day, and the average charge per ton, and passengers per mile, will be about 2d. Thus, under the influence of eager competition, we have these railways, with a working expenditure of 47 per cent. on the receipts, running five times the number of trains, at double the speed, yet at one-third the charges applicable to our Natal Railway. In addition to this, we must not forget the lavish expenditure incurred in their construction and working, and in the government duty, rates, and taxes; and then we may fairly set to work to calculate and enlarge on the cost of freight, fuel, and skilled labour in Natal. There is one other point upon which I must touch before concluding this part of my subject. Instances are frequently given of unsuccessful railways, and I wish to ascertain if there are no circumstances connected with their very existence which will serve to explain the want of success attending these operations. Now, I have taken the only fifteen railways in Great Britain and

Ireland upon which the working expenses exceed 75 per cent. of their receipts, and I find that which, to my mind, at once solves the mystery. In the first place, though there is one line among them fifty-one miles in length, the average length of line does not exceed thirteen miles, while the average receipts are only £13,000 a-year, and the working expenses, in some cases, amount to a per centage of 100, 200, and 300. They are almost all branches; and short lines, unless metropolitan, seldom succeed. The same staff which is essential to a short line would often suffice for one considerably longer, as is proved by the evidence of the Mayor of Durban, who is also chairman of the Point Railway. There is another way of estimating the expense of working railways.

Professor Vignoles reduces working expenses to a mileage, that is, the average expense per mile, per train; and the result on the passenger and light traffic trains is, that the total deductions for expenditure from gross receipts is 3s. per mile, per train—2s. 6d. being the lowest, and 3s. 4d. the highest. Particular lines might, from local circumstances, differ in detail; but the following will be found a fair average: 1st. Daily cost of locomotive power and repairs is 1s. 6d.—2nd. The annual depreciation, sinking fund, and interest on stock, tools, shops, and establishments, 6d.—3rd. The daily and annual cost in carriage department, 4d.—4th. The Government duty, office expenses, police, clerks, guards, management, and maintenance of way, 8d. The working expenses per train mile in England is 3s.; in India, 4s. 2d.; in Ceylon, 6s.; in the Cape, 4s. 9d. The Ceylon Railway is seventy-four miles long, which at six trains a day will give 138,972 train miles, and equals at 6s. per train mile £41,691 of working expenses per annum. The Natal Central Railway is seventy miles long, which at four trains per day will give 87,640 train miles, and at 6s. per train mile equals £26,292 of working expenses per annum. Now the Ceylon Railway is the most expensive railway with which I am acquainted (it is, in fact, a Government line); and yet you will observe that, in comparing it with the Central Railway, according to this system, I obtain a working expenditure for the latter line of £14,000 less than that which I have allowed for it, and which would still leave the guarantee free and

untouched. The simple fact is (and I wish it to be clearly understood), that the whole secret of the success of our proposed railway in Natal will consist of a manageable amount of traffic conducted at a low rate of speed, and on a principle of economy such as prevails in America, yet at highly remunerative prices. For I admit that the charges we have obtained under the Bill are high; though they will still be fifty per cent. less than the present charges, and will thus effect a saving to the colony of £68,000 a year. But, gentlemen, while fully admitting that this is a question which deserves—as indeed it has received—a most patient and careful consideration, I yet cannot help thinking that there are some few among you whose minds have been too entirely absorbed by the contemplation of that liability which the colony is about to assume, and of that loss which, in opposition to all reliable evidence, the colony might hereafter be called upon to sustain. Let us now, for a moment, treat of this matter in a thoroughly practical and business-like spirit, and endeavour to estimate, as nearly and as truthfully as we can, those chances of profit or loss which might attend the construction of a central line of railway in Natal. The first, greatest, and most obvious source of profit arising from the railway will, of course, be realized by a reduction of fifty per cent. in the cost of transport; which, as I have already shown you, will effect a saving to the colony under that head alone of not less than £68,000 a year. The next most important item of profit to which we may fairly assign a money value, is to be found in the engineer's estimate, that out of a capital of £670,000, more than £400,000 will have to be expended within the colony, and will doubtless pass into the pockets of the trading and farming public, who will have to supply the food, clothing, and other necessities of life to the imported laborers. This large sum, disseminated as it more or less would be among all classes of the community, would inevitably effect a considerable increase in the trade, revenue, and general prosperity of the country; and if estimated at only ten per cent., would represent a profit of £40,000 a year. Then, again, time is money; and time saved is money made. This is a truism which few of us will attempt to deny; though there may be among us those who, in the

practice of our ordinary lives, pay little regard to the truth and value of the principle. Let us estimate, if possible, the money value of that time which will be economized by means of a railway, and let us first do so with reference to the central or lower line only. Thus, if we estimate the number of persons travelling on that line at 100 a day, or 30,000 for a year of 300 days, and if we suppose each one to save or gain six hours in the time of transit, there would be at once a clear gain of 180,000 hours, or 22,500 working days of eight hours each day. Again, if we consider the position and business occupations of a large class of those who would travel, and also the high rate of wages existing in this colony, we may fairly value time at 1s. an hour, or 8s. for each working day of eight hours. Hence we should have a saving of labor equal to that of seventy-five men, or a clear profit of £9,000 per annum.

Taking, then, only the three items I have mentioned, viz., £68,000, £40,000, and £9,000, we obtain a sum of £117,000 as the annual profit accruing to the colony from the establishment of the Central Railway alone. And if, by including in this calculation, the profit arising from the upper and longer longer line of railway, we merely double that amount, we shall arrive at a total of £234,000 per annum, against a mere risk or liability of having to pay the guaranteed sum of £42,000; or, in other words, a clear gain, under the worst possible circumstances, of nearly £200,000 per annum. Nor, if we pay attention to the enormous increase in the value of land which has invariably followed upon the establishment of railways in other countries, can we omit so important a fact from our present consideration. If only we were to suppose that all the land within ten miles of these railways should derive an additional value of 5s. per acre, this would at once give us a gain of a quarter of a million sterling, which would, in fact, not represent one-fourth of the profit which the whole colony would thus obtain; for I need hardly add that this rule is more especially applicable to places where the system of transport is so slow, so uncertain, and so expensive, that it might well be termed the curse of South Africa.

But there are many other important considerations which would add materially to the advantages to be derived from rail-

way communication, but to which it would be difficult, and indeed useless, to assign a pecuniary value. For who could pretend to estimate the price of that increased strength and security which rapid locomotion, and the importation of some thousands of labourers, would bring to a colony like this, and to those States in the interior to which Natal forms the best and nearest thoroughfare. For, remember this, that though we have but a small military force, the colony is, and must be, from the very nature of its position, a military colony. We all of us ought to be volunteers; and the time may come when we *must* be volunteers (loud cheers). By rapid means of locomotion, we shall multiply our military strength tenfold (hear, hear), and that is no small advantage to be derived from railways. And who could presume to limit and define the value of those benefits which must attend the operations of a company destined to open up the mineral wealth of this colony, not only to those who inhabit it, but to the ships of all nations that may visit its shores. It will be noticed that in thus roughly draughting an account of profit and loss, I have not included, under the latter head, the land and concessions to be granted to the Natal Coal Company. These considerations I have intentionally omitted from the account, and I have done so because I have as yet met with but few reflecting men who were not willing to admit that the colony could not fail to derive, from the very nature of the concessions granted, a separate and more than adequate return for the sacrifice made. That in fact it would be better to confer upon a company the right of opening up the mineral resources of the colony, than that they should for ever remain buried and unused; and that it would be more politic to make a free grant of the waste lands of the Crown, if, by so doing, you can ensure their being occupied, and brought under cultivation. For let it ever be borne in mind, that no such company could afford to allow these lands to remain idle and unproductive; and that, by thus appealing to the self-interest of hundreds of shareholders, spread over the length and breadth of England, you will be taking the first step towards establishing a recruiting agency for such a system of immigration as may be sufficient to supply the growing requirements of this prosperous colony. It is true that calculations such as these upon which I have entered, and which

exhibit results of so astonishing a character, may appear to many as being greatly exaggerated; but I invite any among you honestly to turn over in your minds the facts and figures I have this day brought before you, and to make from them whatever deductions you may deem fair, and I am convinced that the result will still be such as to prove the position I am endeavouring to establish, which is this, that the railway cannot fail to secure to this colony military, social, political, and fiscal advantages to which all possible liability or loss must appear utterly small and insignificant. Who can estimate the value of that great Overberg trade, which will bring wealth and population to your towns? And who can assign a money value to that domestic comfort which men gain by being able to visit their families and friends; and by being able to obtain, by change of air and scenery, a healthful recreation amid the busy labours of their lives. In taking that money value, you estimate really the lowest and most insignificant portion of the value that must accrue to you.

You are giving to the Coal Company important concessions. You are giving that which is very valuable; but it is like the precious ore to the inhabitant of the Gold Coast, only valuable inasmuch as it enables him to obtain a boon which he is able to appreciate (cheers). It is better that you should make use of that article than that it should remain buried uselessly (applause). It is better that you should be able to point out, by this means, to your fellow-countrymen, a place where honest industry can obtain an adequate reward. Gentlemen, you know how mysteriously these two enterprises have been wedded together by the united wisdom of the Legislative Council (laughter). I am not surprised that men, seeing as they did, and as I did, the enormous advantages attending the obtaining of an upper line of railway, should endeavour to link the two together. I hope, however, that that will not lead to any delay; because I am certain that delay cannot take place without inflicting upon the colony a deep, if not lasting injury. If the shoe pinches at this moment, you must, unless some extraordinary change takes place, experience more than ever the evils resulting from the want of transport. In Natal you have a climate which (I speak from the looks of those around me), appears to be both genial

and healthy. You have a soil which, in its productive power, is almost unsurpassed; and a geographical position by which Nature has destined that this colony should be the thoroughfare of a great trade from beyond your frontier,—a trade which no artificial system of commercial dealing can possibly take from you. You have on your borders, States, each of which, I am given to understand, possesses considerable mineral wealth. The rulers of those States are men in advance of those by whom they are surrounded, and disposed to further the interests of the countries over which they have been called to rule. Capital has now been largely supplied, as also has labour; the latter so much so, that I believe, with the arrival of the next batch of Coolie ships, the whole requisitions of the colonists will have been satisfied. But you want transport; and the railway will give you that. You want population; the railway will give you that. The natives around you are peaceful; you have paid your way; you have had no war, and will consequently have no burden. If ever there was a colonial child of England of which the mother country had reason to be proud, I say, without the least hesitation, that child is Natal (loud cheers).

In the benefits to be conferred by a railway, every rightly-toned heart will rejoice. The statesman may examine the railway system in its political bearings alone; the soldier may dilate on the means that it affords for the prosecution of military operations, either of attack or defence; the economist may resolve the entire question into one of pounds, shillings, and pence; and the professional man may estimate its advantages in the saving of that time which to him is money; but the philanthropist will make these subordinate to higher considerations. He will think of the facilities it affords for the communion of classes, and the preservation of international tranquillity; and he will regard the means of health to the body and relaxation to the mind which railways can furnish, as well as the intercourse they cherish between domestic and social circles, as of no secondary importance.

Gentlemen! I thank you heartily for the kindness with which you have listened to my address, and for the sympathy with which you have supported me during the contest in which I have been engaged. I know that there is no occupation more dull than to listen to statistics, and I feel also too truly how difficult it is to

render them attractive. But I believe that the day may come, and, indeed, is not far distant, when discussion may again be raised regarding the extension of the railway system to other parts of the colony, and when the facts and figures I have this day brought before you, embodied in cold type, may prove serviceable still. For myself, I can only say that, even if I should fail in carrying away with me any other title to your recollection, I shall yet feel an honest pride in being remembered as having been connected with railway enterprise in Natal.

His Worship the Mayor begged to say that Mr. Elliot deserved the highest praise and thanks for the zeal and ability he had displayed in the cause of railway enterprise in Natal; and the talent, knowledge, and disinterestedness of which he had given proof, not only in the address with which he had this night favoured the citizens, but as evidenced throughout the whole of his sojourn in this colony. It would be impossible (His Worship continued) to follow Mr. Elliot through his interminable array of figures, but these would be faithfully transmitted to the public through the press, which, thanks to shorthand and nimble fingers, could rescue from oblivion, warm from the lips, and instinct with the soul of the speaker, all the brilliant and spirit-stirring effusions which the circumstances of the present times combined to draw forth. There were one or two things in which he (Mr. Tomlinson), as an individual, could bear Mr. Elliot out—as, for instance, when he stated that our commerce was daily increasing, while the means of transit was daily decreasing. Mr. Elliot had told us the best means by which we could secure an overland trade, viz., by a system of railway communication. He (Mr. T.) was sure all present would be glad they had had the good fortune to be present this night, and heard the important subject of railway enterprise so ably treated. (Cheers.)

Mr. Thomson proposed a vote of thanks to Mr. Elliot.

Mr. Pepworth seconded this proposition, which was carried with vociferous cheering.

Mr. Elliot assured the meeting he felt deeply grateful.

A vote of thanks to the Mayor terminated the proceedings.

PHOTOMOUNT
PAMPHLET BINDER

Manufactured by
GAYLORD BROS. Inc.
Syracuse, N. Y.
Stockton, Calif.

To avoid fine, this book should be returned on
or before the date last stamped below

